



State of New Hampshire

## Health Information Exchange Planning and Implementation Project

"Considering alternatives and narrowing options" discussion document  
Business & Technical Operations Workgroup

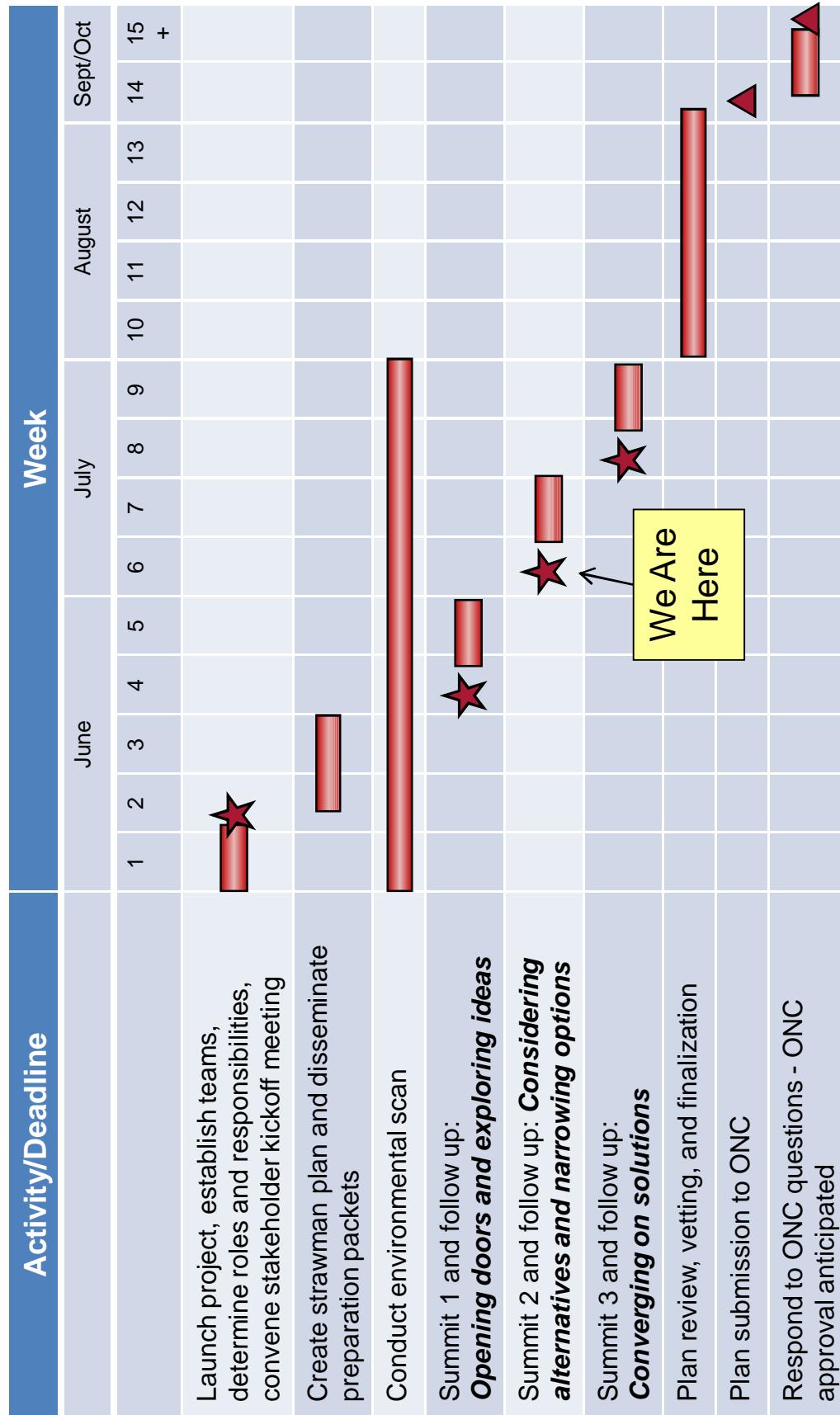
July 6, 2010

# Agenda

- Opening remarks - "Considering alternatives and narrowing options“ phase**
- Discussion of transaction mapping to HIE building blocks**
- Discussion of prioritization**
- Review of initial technical infrastructure packages and business/technical operations approaches**
- Wrap-up and next steps**

# Review of Approach and High Level Timeline

## Segment 1 Timeline: June 1 – October 31



# Agenda

Opening remarks - "Considering alternatives and narrowing options" phase

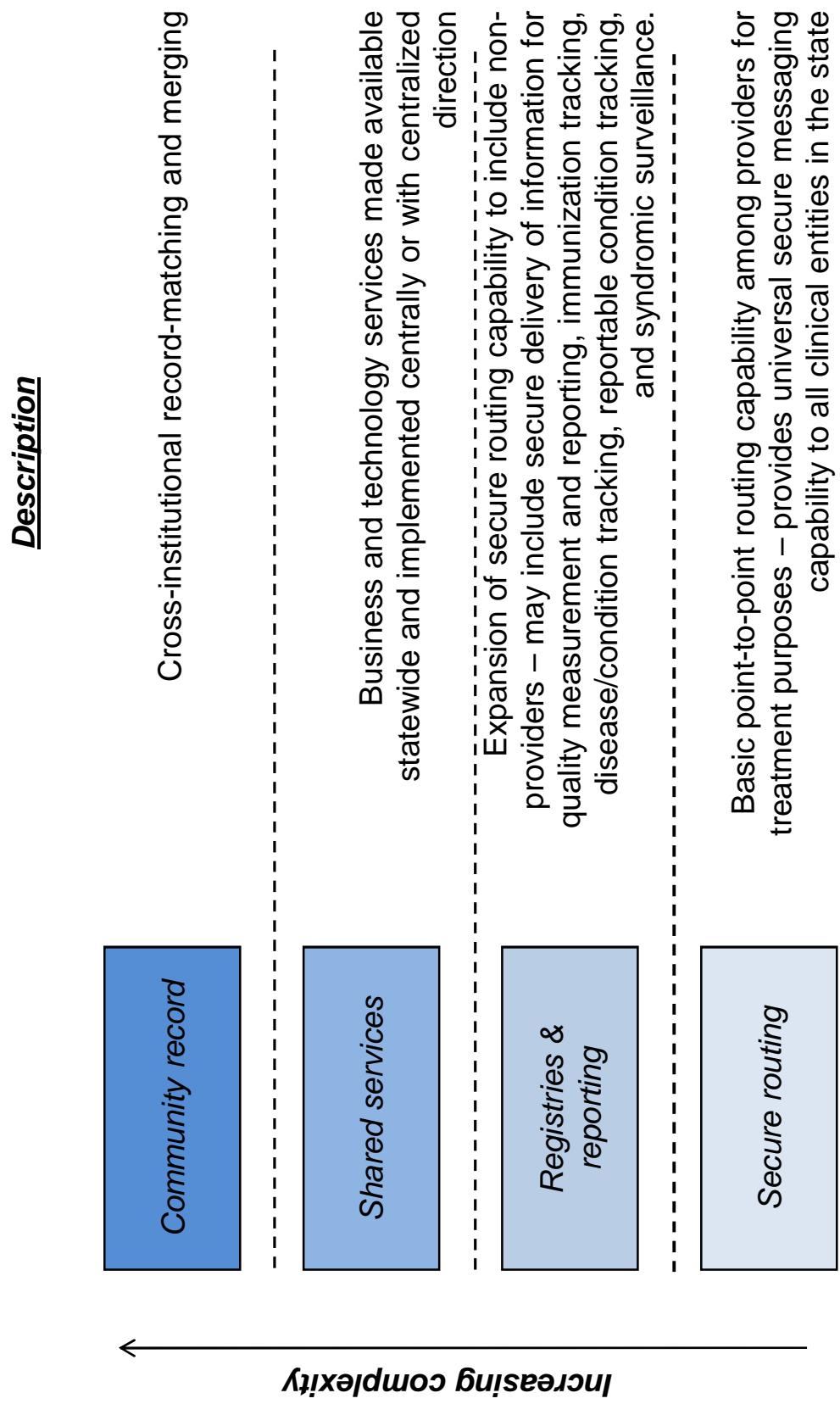
Discussion of transaction mapping to HIE building blocks

Discussion of prioritization

Review of initial technical infrastructure packages and business/technical operations approaches

Wrap-up and next steps

## RECAP: We started with these HIE Building Blocks...



## ...and these Reference Use Cases

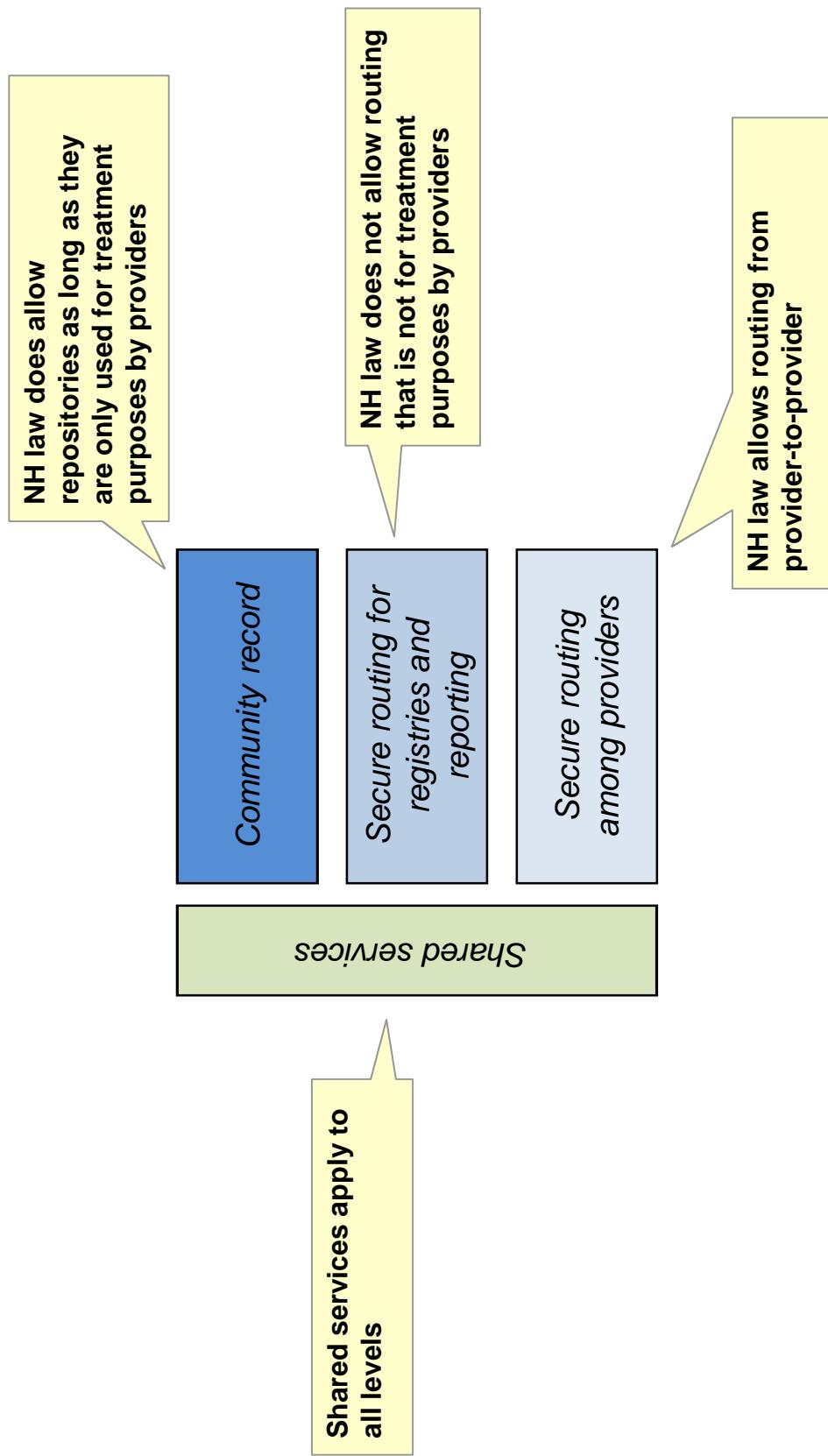
HIE Building Block	What	From whom	To whom
<b>Secure routing</b>	Discharge summary	Hospital	Referring physician and/or PCP
	Discharge summary	Hospital	Hospital
	Discharge summary	Hospital	Other care settings
	Departmental reports	Hospital	Referring physician and/or PCP
	Claims submission & eligibility checking	Hospital	Health plan
	Discharge summary	Hospital	Patient
	Imaging reports	Imaging center	PCP or specialist
	Images	Imaging center	PCP or specialist
	Lab results	Lab	PCP or specialist
	Referral -- Summary of care record	PCP	Specialist
	Referral -- Summary of care record	PCP or specialist	Hospital
	eRX	PCP or specialist	Pharmacy
	Lab order	PCP or specialist	Lab
	Imaging order	PCP or specialist	Imaging center
<b>Registries &amp; reporting</b>	Claims submission & eligibility checking	PCP or specialist	Health plan
	Post-visit summary	PCP or specialist	Patient
	Consult note -- Summary of care record	Specialist	PCP
	Immunization record	Hospital	Public health
	Syndromic surveillance data	Hospital	Public health
	Reportable lab results	Hospital	Public health
	Quality measures	Hospital	CMS and/or NH Medicaid
	Immunization record	PCP or specialist	Public health
	Syndromic surveillance data	PCP or specialist	Public health
	Access to health information	PCP or specialist	Patient
<b>Community record</b>	Medication history	Pharmacy	Hospital
	Medication history	Pharmacy	PCP or specialist
	Community record	Multiple sources	Hospital
	Community record	Multiple sources	PCP or specialist



## Recap of Summit 1

- Business Operations Working Group
  - Introduced framework and approach
  - Detailed review of reference Use Cases
- Finance
  - Introduced framework and approach
  - Inventory of financing approaches and options
- Governance
  - Introduced framework and approach
  - Review of governance models and principles
- Technical infrastructure
  - Introduced framework and approach
  - Review of reference Use Cases
- Legal/Policy
  - Introduced framework and approach
  - Review of Use Cases in context of NH state law

## Summit 1 review by all Working Groups have generated some refinements to the HIE Building Blocks....



# ...and some modifications to the Use Cases

- Proposed additions to Use Cases**
  - Add: Chart review by Public Health for case investigation
  - Add: Creation of Radiation Exposure Registry
  - Add: Public health labs
    - PH lab results to provider
    - PH lab results to other labs
    - Provider orders to PH labs
  - Add: Patient summary request from provider to provider
  - Add: Laboratory decision support for revenue cycle management
  - Add: Commercial imaging centers and laboratories to use cases
  - Add: Public health alerts as per Stage 2 MU recommendations
  - Add: Medication history from other clinical sources (not just from pharmacy)
  - Add: Quality measure delivery from ambulatory physicians to CMS and/or plans (already had hospitals, just needed to add ambulatory physicians)
- Proposed modifications to use cases**
  - Modify: Discharge *instructions* to patient (instead of discharge summary)
  - Modify: ADT transactions from hospital to referring physician to PCP (instead of just discharge summaries; includes ED visits)

## Updated Reference Use Case List: Secure routing to providers

HIE Building Block	What	From whom	To whom
Secure routing to providers	Consult note -- Summary of care record	Specialist	PCP
Secure routing to providers	eRX	PCP or specialist	Pharmacy
Secure routing to providers	Hospital admission notification	Hospital	Referring physician and/or PCP
Secure routing to providers	Hospital admission notification	Hospital	Referring Hospital
Secure routing to providers	Hospital discharge summary	Hospital	Referring physician and/or PCP
Secure routing to providers	Hospital discharge summary	Hospital	Hospital
Secure routing to providers	Hospital discharge summary	Hospital	Other care settings
Secure routing to providers	Hospital ED visit summary	Hospital	Referring physician and/or PCP
Secure routing to providers	Images	Hospital	PCP or specialist
Secure routing to providers	Images	Imaging center	PCP or specialist
Secure routing to providers	Imaging order	PCP or specialist	Imaging center
Secure routing to providers	Imaging reports	Hospital	PCP or specialist
Secure routing to providers	Imaging reports	Imaging center	PCP or specialist
Secure routing to providers	Key clinical information summary	Hospital	Hospital
Secure routing to providers	Key clinical information summary	PCP or specialist	Hospital
Secure routing to providers	Lab order	PCP or specialist	Hospital
Secure routing to providers	Lab order	PCP or specialist	National lab
Secure routing to providers	Lab results	Hospital	PCP or specialist
Secure routing to providers	Lab results	National lab	PCP or specialist
Secure routing to providers	Lab results	Public health lab	Hospital
Secure routing to providers	Lab results	Public health lab	PCP or specialist
Secure routing to providers	Medication history	Pharmacy	Hospital
Secure routing to providers	Medication history	Pharmacy	PCP or specialist
Secure routing to providers	Referral -- Summary of care record	PCP	Specialist
Secure routing to providers	Referral -- Summary of care record	PCP or specialist	Hospital
Secure routing to providers	Request for key clinical information	Hospital	Hospital
Secure routing to providers	Request for key clinical information	Hospital	PCP or specialist

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## Updated Reference Use Case List: Expanded secure routing

HIE Building Block	What	From whom	To whom
Expanded secure routing	Claims submission & eligibility check	Hospital	Health plan
Expanded secure routing	Claims submission & eligibility check	PCP or specialist	Health plan
Expanded secure routing	Immunization record	Hospital	Public health
Expanded secure routing	Immunization record	PCP or specialist	Public health
Expanded secure routing	Laboratory ordering decision support	Payers	PCP or specialist and hospitals
Expanded secure routing	Public health alerts	Public health	Hospital
Expanded secure routing	Public health alerts	Public health	PCP or specialist
Expanded secure routing	Quality measures	Hospital	CMS and/or NH Medicaid
Expanded secure routing	Quality measures	PCP or specialist	CMS and/or NH Medicaid
Expanded secure routing	Radiation exposure report	Hospital	Radiation exposure registry
Expanded secure routing	Radiation exposure report	Imaging center	Radiation exposure registry
Expanded secure routing	Reportable lab results	Hospital	Public health
Expanded secure routing	Syndromic surveillance data	Hospital	Public health
Expanded secure routing	Syndromic surveillance data	PCP or specialist	Public health
Expanded secure routing	Discharge instructions	Hospital	Patient
Expanded secure routing	General medical summary	PCP or specialist	Patient
Expanded secure routing	Post-visit summary	PCP or specialist	Patient

## Updated Reference Use Case List: Community record

HIE Building Block	What	From whom	To whom
Community record	Community record	Multiple sources	Hospital
Community record	Community record	Multiple sources	PCP or specialist
Community record	Medication history	Other clinical sources	Hospital
Community record	Medication history	Other clinical sources	PCP or specialist
Community record	Public health case investigation info	Hospital	Public health
Community record	Public health case investigation info	PCP or specialist	Public health

## Possible Shared Service Candidates

- Terminology Service
- Format Conversions
- RLS
- MPI
- Certificate Authority
- Subscription Management Directory & Address Resolution Service (e.g. - Provider)
- Multi-factor Security Identity Proofing
- Credential Provisioning Gateway (e.g. NHIN)
- Consent Management
- Privacy Policy Enforcement
- Data Aggregation/Merging Other(s)

# Agenda

- Opening remarks - "Considering alternatives and narrowing options" phase
- Discussion of transaction mapping to HIE building blocks
- Discussion of prioritization**
- Review of initial technical infrastructure packages and business/technical operations approaches
- Wrap-up and next steps

## Strawman prioritization

- Based on WG discussion in Summit 1, we have taken a first-cut stab at a prioritization of use cases
- This is a strawman for discussion and modification through the consensus process
- Prioritization criteria
  - Legality: Adherence with NH State Law
  - Difficulty: Technical, Business/Governance, Legal complexity
  - Demand: Stakeholder interest; federal/state requirements
  - Current market availability: Ability of stakeholders to procure service through existing market health information exchange services
- Using these criteria, we created a Strawman Phase 1, Phase 2, and Phase 3
  - Does not yet consider that New Hampshire may not want to pursue some functions at all

## Strawman Phase 1

HIE Building Block	What	From whom	To whom	Phasing
Secure routing to providers	Consult note -- Summary of care record	Specialist	PCP	1
Secure routing to providers	Hospital admission notification	Hospital	Referring physician and/or PCP	1
Secure routing to providers	Hospital admission notification	Hospital	Referring Hospital	1
Secure routing to providers	Hospital discharge summary	Hospital	Referring physician and/or PCP	1
Secure routing to providers	Hospital discharge summary	Hospital	Hospital	1
Secure routing to providers	Hospital ED visit summary	Hospital	Referring physician and/or PCP	1
Secure routing to providers	Imaging reports	Hospital	PCP or specialist	1
Secure routing to providers	Key clinical information summary	Hospital	Hospital	1
Secure routing to providers	Key clinical information summary	PCP or specialist	Hospital	1
Secure routing to providers	Lab results	Hospital	PCP or specialist	1
Secure routing to providers	Referral -- Summary of care record	PCP	Specialist	1
Secure routing to providers	Referral -- Summary of care record	PCP or specialist	Hospital	1
Secure routing to providers	Request for key clinical information	Hospital	Hospital	1
Secure routing to providers	Request for key clinical information	Hospital	PCP or specialist	1

## Strawman Phase 2

HIE Building Block	What	From whom	To whom	Phasing
Secure routing to providers	Hospital discharge summary	Hospital	Other care settings	2
Secure routing to providers	Lab order	PCP or specialist	Hospital	2
Secure routing to providers	Lab results	Public health lab	Hospital	2
Secure routing to providers	Lab results	Public health lab	PCP or specialist	2
Expanded secure routing	Immunization record	Hospital	Public health	2
Expanded secure routing	Immunization record	PCP or specialist	Public health	2
Expanded secure routing	Laboratory ordering decision support	Payers	PCP or specialist and hospitals	2
Expanded secure routing	Reportable lab results	Hospital	Public health	2
Expanded secure routing	Syndromic surveillance data	Hospital	Public health	2
Expanded secure routing	Syndromic surveillance data	PCP or specialist	Public health	2
Community record	Community record	Multiple sources	Hospital	2
Community record	Community record	Multiple sources	PCP or specialist	2
Community record	Medication history	Other clinical sources	Hospital	2
Community record	Medication history	Other clinical sources	PCP or specialist	2

## Strawman Phase 3

HIE Building Block	What	From whom	To whom	Phasing
Secure routing to providers	eRX	PCP or specialist	Pharmacy	3
Secure routing to providers	Images	Hospital	PCP or specialist	3
Secure routing to providers	Images	Imaging center	PCP or specialist	3
Secure routing to providers	Imaging order	PCP or specialist	Imaging center	3
Secure routing to providers	Imaging reports	Imaging center	PCP or specialist	3
Secure routing to providers	Lab order	PCP or specialist	National lab	3
Secure routing to providers	Lab results	National lab	PCP or specialist	3
Secure routing to providers	Medication history	Pharmacy	Hospital	3
Secure routing to providers	Medication history	Pharmacy	PCP or specialist	3
Expanded secure routing	Claims submission & eligibility check	Hospital	Health plan	3
Expanded secure routing	Claims submission & eligibility check	PCP or specialist	Health plan	3
Expanded secure routing	Discharge instructions	Hospital	Patient	3
Expanded secure routing	General medical summary	PCP or specialist	Patient	3
Expanded secure routing	Post-visit summary	PCP or specialist	Patient	3
Expanded secure routing	Public health alerts	Public health	Hospital	3
Expanded secure routing	Public health alerts	Public health	PCP or specialist	3
Expanded secure routing	Quality measures	Hospital	CMS and/or NH Medicaid	3
Expanded secure routing	Quality measures	PCP or specialist	CMS and/or NH Medicaid	3
Expanded secure routing	Radiation exposure report	Hospital	Radiation exposure registry	3
Expanded secure routing	Radiation exposure report	Imaging center	Radiation exposure registry	3
Community record	Public health case investigation info	Hospital	Public health	3
Community record	Public health case investigation info	PCP or specialist	Public health	3

## Backup: Prioritization matrix details – Phase 1 and Phase 2

HIE Building Block	What	From whom	To whom	Legality	Difficulty	Demand for service	Current market availability	Phasing
Secure routing to providers	Consult note -- Summary of care record	Specialist	PCP	1	1	1	2	1
Secure routing to providers	Hospital admission notification	Hospital	Referring physician and/or PCP	1	1	1	2	1
Secure routing to providers	Hospital admission notification	Hospital	Referring Hospital	1	1	1	3	1
Secure routing to providers	Hospital discharge summary	Hospital	Referring physician and/or PCP	1	1	1	2	1
Secure routing to providers	Hospital discharge summary	Hospital	Hospital	1	1	1	3	1
Secure routing to providers	Hospital ED visit summary	Hospital	Referring physician and/or PCP	1	1	1	2	1
Secure routing to providers	Imaging reports	Hospital	PCP or specialist	1	1	1	2	1
Secure routing to providers	Key clinical information summary	Hospital	Hospital	1	1	1	3	1
Secure routing to providers	Key clinical information summary	PCP or specialist	Hospital	1	1	1	2	1
Secure routing to providers	Lab results	Hospital	PCP or specialist	1	1	1	2	1
Secure routing to providers	Referral -- Summary of care record	PCP	Specialist	1	1	1	2	1
Secure routing to providers	Referral -- Summary of care record	PCP or specialist	Hospital	1	1	1	2	1
Secure routing to providers	Request for key clinical information	Hospital	Hospital	1	1	1	3	1
Secure routing to providers	Request for key clinical information	Hospital	PCP or specialist	1	1	1	2	1

HIE Building Block	What	From whom	To whom	Legality	Difficulty	Demand for service	Current market availability	Phasing
Secure routing to providers	Hospital discharge summary	Hospital	Other care settings	1	2	1	3	2
Secure routing to providers	Lab order	PCP or specialist	Hospital	1	2	2	3	2
Secure routing to providers	Lab results	Public health lab	Hospital	1	2	3	3	2
Secure routing to providers	Lab results	Public health lab	PCP or specialist	1	2	3	3	2
Expanded secure routing	Immunization record	Hospital	Public health	3	1	1	3	2
Expanded secure routing	Immunization record	PCP or specialist	Public health	3	1	1	3	2
Expanded secure routing	Laboratory ordering decision support	Payers	PCP or specialist and hospitals	3	3	1	2	2
Expanded secure routing	Reportable lab results	Hospital	Public health	3	1	2	3	2
Expanded secure routing	Syndromic surveillance data	Hospital	Public health	3	1	2	3	2
Expanded secure routing	Syndromic surveillance data	PCP or specialist	Public health	3	2	2	3	2
Community record	Community record	Multiple sources	Hospital	1	3	2	3	2
Community record	Community record	Multiple sources	PCP or specialist	1	3	2	3	2
Community record	Medication history	Other clinical sources	Hospital	1	3	1	3	2
Community record	Medication history	Other clinical sources	PCP or specialist	1	3	1	3	2

## Backup: Prioritization matrix details – Phase 3

HIE Building Block	What	From whom	To whom	Legality	Difficulty	Demand for service	Current market availability	Phasing
Secure routing to providers	eRx	PCP or specialist	Pharmacy	1	3	1	1	3
Secure routing to providers	Images	Hospital	PCP or specialist	1	3	2	2	3
Secure routing to providers	Images	Imaging center	PCP or specialist	1	3	3	3	3
Secure routing to providers	Imaging order	PCP or specialist	Imaging center	1	3	3	3	3
Secure routing to providers	Imaging reports	Imaging center	PCP or specialist	1	2	3	3	3
Secure routing to providers	Lab order	PCP or specialist	National lab	1	3	2	1	3
Secure routing to providers	Lab results	National lab	PCP or specialist	1	3	2	1	3
Secure routing to providers	Medication history	Pharmacy	Hospital	1	3	1	1	3
Secure routing to providers	Medication history	Pharmacy	PCP or specialist	1	3	1	1	3
Expanded secure routing	Claims submission & eligibility check	Hospital	Health plan	3	3	3	1	3
Expanded secure routing	Claims submission & eligibility check	PCP or specialist	Health plan	3	3	1	1	3
Expanded secure routing	Discharge instructions	Hospital	Patient	3	3	1	1	3
Expanded secure routing	General medical summary	PCP or specialist	Patient	3	3	1	1	3
Expanded secure routing	Post-visit summary	PCP or specialist	Patient	3	3	1	1	3
Expanded secure routing	Public health alerts	Public health	Hospital	3	3	2	3	3
Expanded secure routing	Public health alerts	Public health	PCP or specialist	3	3	2	3	3
Expanded secure routing	Quality measures	Hospital	CMS and/or NH Medicaid	3	3	3	2	3
Expanded secure routing	Quality measures	PCP or specialist	CMS and/or NH Medicaid	3	3	3	3	3
Expanded secure routing	Radiation exposure report	Hospital	Radiation exposure registry	3	3	3	3	3
Expanded secure routing	Radiation exposure report	Imaging center	Radiation exposure registry	3	3	3	3	3
Community record	Public health case investigation info	Hospital	Public health	3	3	3	3	3
Community record	Public health case investigation info	PCP or specialist	Public health	3	3	3	3	3

## Agenda

Opening remarks - "Considering alternatives and narrowing options" phase

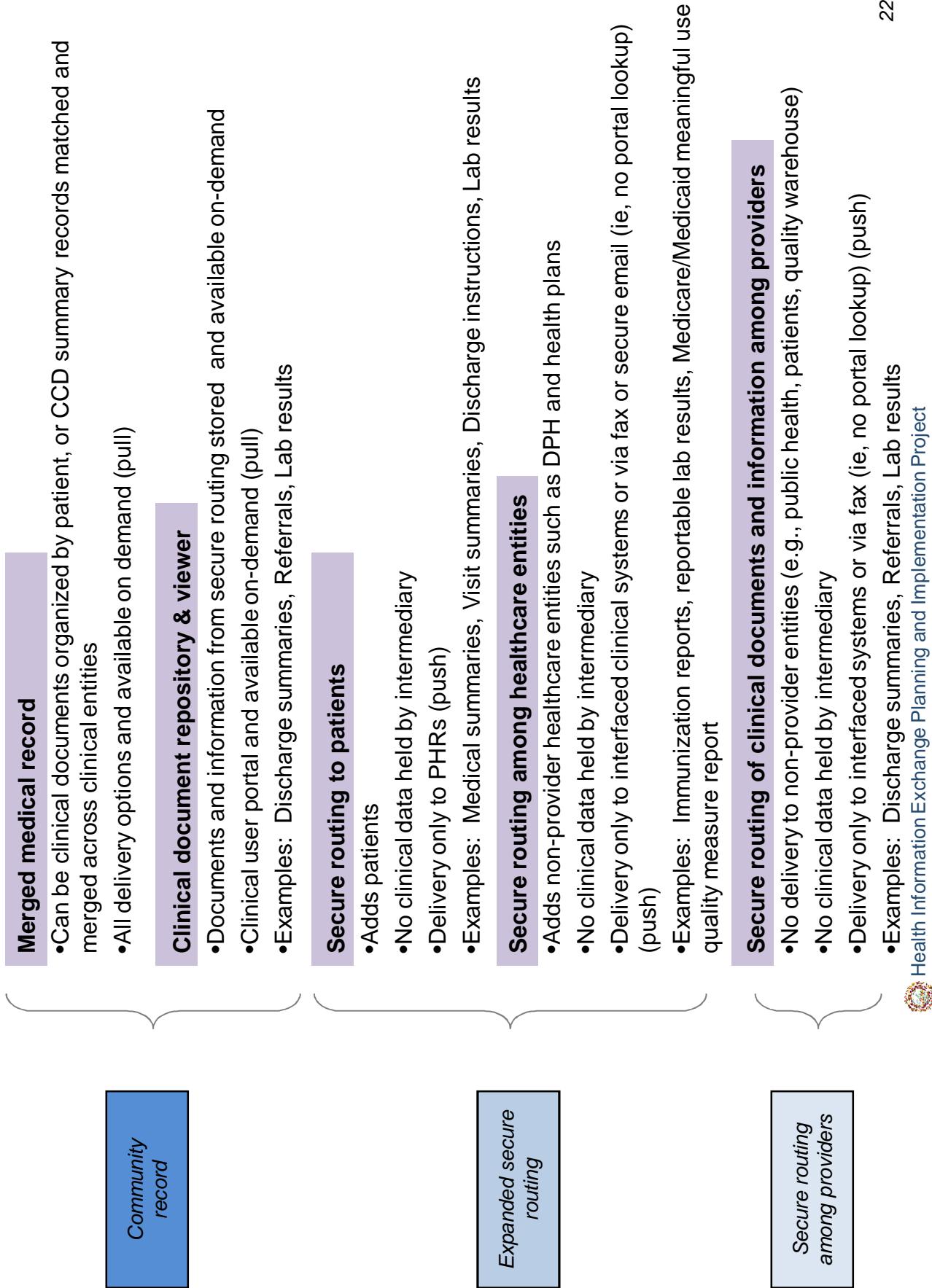
Discussion of transaction mapping to HIE building blocks

Discussion of prioritization

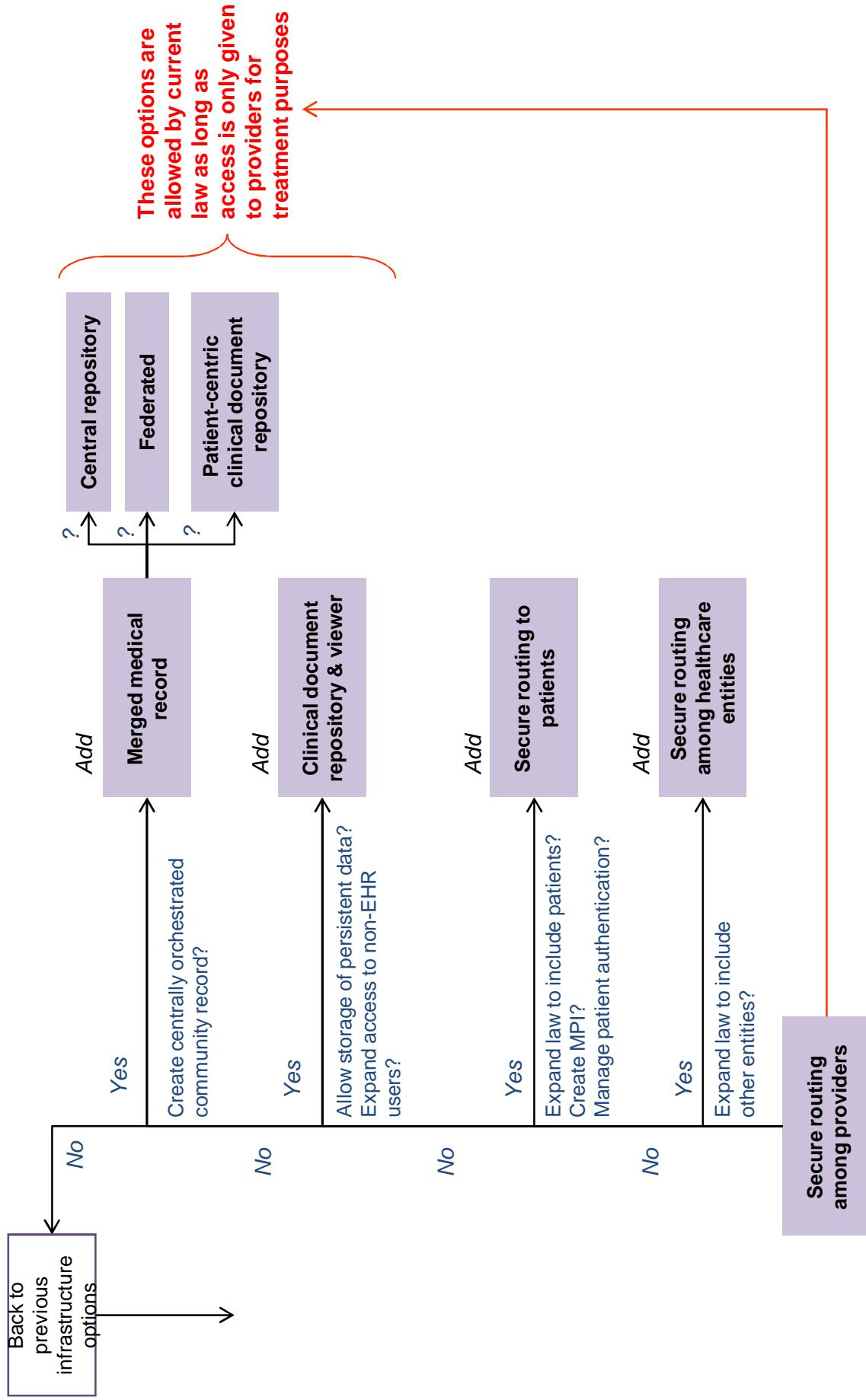
Review of initial technical infrastructure packages and business/technical operations approaches

Wrap-up and next steps

# HIE Building Block Options Mapped to Infrastructure Components



# Infrastructure Components Logic Tree



# HIE and Infrastructure Building Blocks

## HIE building block

### Infrastructure components

#### Added complexity of each block

##### **Merged medical record**

###### *Add integrated clinical records*

Patient directory (MPI)  
Clinical document or clinical data repository

- Persistent data
- Requires patient-matching
- For merging records, minimally requires message structure/format standardization

##### **Clinical document repository & viewer**

###### *Add portal/ access for non-EHR users*

Message/document repository  
Clinical user portal

- Persistent data
- Requires management of end-user authentication & authorization and support for portal end-users
- Can add patient-matching to organize documents, but not required for document delivery and viewing

##### **Secure routing among health care entities & patients**

###### *Add delivery to patients*

Patient directory (MPI)  
Delivery adaptor (PHR)

- Adds entities not allowed by current NH law
- Requires patient-matching and authentication

##### **Secure routing among health care entities**

Non-provider entity registry (e.g., public health, quality warehouses, social services, etc)

- Adds entities not allowed by current NH law

##### *Core infrastructure: Secure routing to providers*

Authentication & secure transport  
Provider entity registry  
Provider directory  
Message format translation & validation  
Message routing  
Delivery acknowledgement  
Audit/logging  
Delivery adaptors (clinical system, fax, secure email)

- Simplest step up from current state
- No persistent data
- No patient-matching
- Only includes providers
- No portal

##### **Secure routing of clinical documents and information among providers**

# Considerations for Business/Technical Operations

- Management
  - Program/project management
  - Vendor procurement strategies/vendor management
  - Organizational certification/compliance monitoring
  - Rollout planning/management
    - Coordination with RECs
    - Clinical recruitment strategy
- Technical
  - Business continuity/disaster recovery
  - System monitoring/incident management
    - Breach notification
  - Help Desk
  - Maintenance and upgrade planning and management
  - Support infrastructure
  - Certificate authority and management
  - OID distribution

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## Wrap up and next steps

- Next Summit Monday, July 12, 2010
- Next conference call Tuesday, July 20, 9-11AM (877) 449-6558 Code:  
3957248160
- Meeting summary to be distributed to all workgroups
- Offline consideration of transaction prioritization – please send your thoughts

## Appendix - Summary of Medicare Meaningful Use Requirements From CMS NPRM, Dec 2009

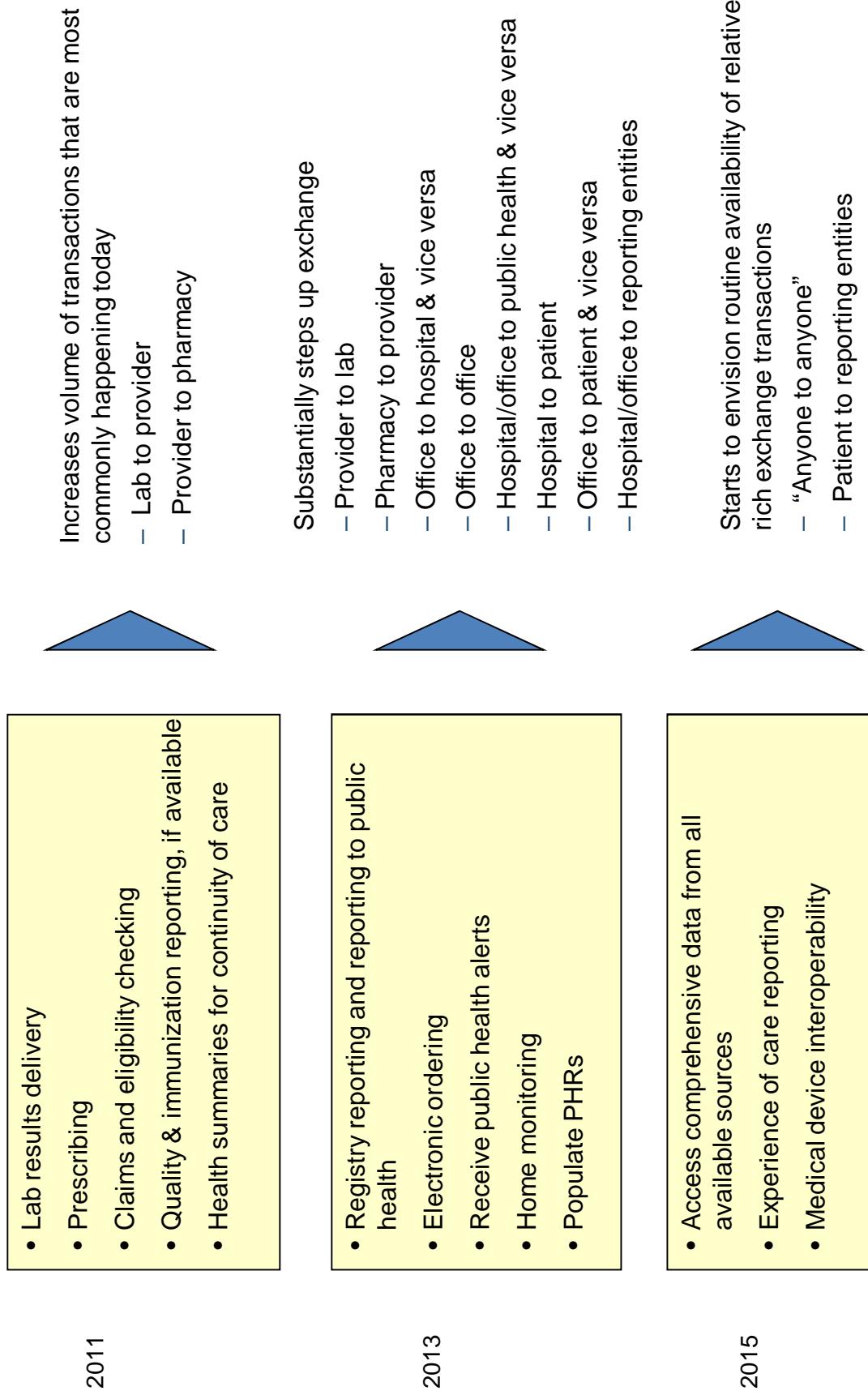
	<b>Stage 1 2011-2012</b>	<b>Stage 2 (est) 2013-2014</b>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>• Structured problem list</li> <li>• Active meds list</li> <li>• Active allergy list, Demographics</li> <li>• Vital signs</li> <li>• Smoking status</li> </ul>	
<b>Patients</b>	<ul style="list-style-type: none"> <li>• Send reminders to patients per patient preference</li> <li>• Provide patients with electronic copy of health information upon request</li> <li>• Provide patients with timely electronic access to their health information within 96 hours of availability to EP</li> </ul>	<ul style="list-style-type: none"> <li>• Make patient data available in PHRs</li> </ul>
<b>Decision support</b>	<ul style="list-style-type: none"> <li>• drug-drug, drug-allergy, drug-formulary checks;</li> <li>• order entry for diagnostic tests and prescribing</li> <li>• condition-specific registry reporting</li> </ul>	
<b>Interoperability</b>	<ul style="list-style-type: none"> <li>• electronic claims submission and insurance eligibility-checking,</li> <li>• electronic lab results,</li> <li>• immunization registry reporting,</li> <li>• eRX,</li> <li>• summary-of-care record for each transition of care</li> <li>• Capability to exchange key clinical information (1 test)</li> <li>• Medication reconciliation at each transition of care</li> <li>• Capability to submit public health data to public health agencies (1 test)</li> </ul>	<ul style="list-style-type: none"> <li>• Electronic transmission of key clinical information, quality measures, and public health data</li> <li>• Lab ordering</li> <li>• RX histories</li> </ul>
<b>Quality measurement</b>	<ul style="list-style-type: none"> <li>• Core plus specialty measures: attestation (2011); electronic report (2012)</li> </ul>	
<b>Privacy &amp; security</b>	<ul style="list-style-type: none"> <li>• Perform security audit</li> </ul>	

## Appendix - Summary of Medicare Meaningful Use Requirements From CMS NPRM, Dec 2009 – with NIH Legal Requirements Superimposed in Red

	<b>Stage 1 2011-2012</b>	<b>Stage 2 (est) 2013-2014</b>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>Structured problem list</li> <li>Active meds list</li> <li>Active allergy list, Demographics</li> <li>Vital signs</li> <li>Smoking status</li> </ul>	
<b>Patients</b>		<ul style="list-style-type: none"> <li>Send reminders to patients per patient preference</li> <li>Provide patients with electronic copy of health information upon request</li> <li>Provide patients with timely electronic access to their health information within 96 hours of availability to EP</li> </ul>
<b>Decision support</b>	<ul style="list-style-type: none"> <li>drug-drug, drug-allergy, drug-formulary checks;</li> <li>order entry for diagnostic tests and prescribing</li> </ul>	<ul style="list-style-type: none"> <li>condition-specific registry reporting</li> </ul>
<b>Interoperability</b>		<ul style="list-style-type: none"> <li>electronic claims submission and insurance eligibility checking;</li> <li>electronic lab results,</li> <li>eRX,</li> <li>immunization registry reporting;</li> <li>summary-of-care record for each transition of care</li> <li>Capability to exchange key clinical information (1 test)</li> <li>Medication reconciliation at each transition of care</li> </ul>
<b>Quality measurement</b>		<ul style="list-style-type: none"> <li>Capability to submit public health data to public health agencies (1 test)</li> </ul>
<b>Privacy &amp; security</b>	<ul style="list-style-type: none"> <li>Perform security audit</li> </ul>	

## Appendix - Meaningful Use Trajectory From CMS NPRM (2011) and MU Working Group Recommendations (2013-15)

### Meaningful Use objectives requiring health exchange



# Appendix - Meaningful Use Trajectory

## From CMS NPRM (2011) and MU Working Group Recommendations (2013-15) With NH Legal Requirements for HIE Superimposed in Red

### Meaningful Use objectives requiring health exchange

